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TITLE: SERVICE HISTORY LOG OF COMPUTER REPAIRS

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SERVICE HISTORY LOG OF COMPUTER REPAIRS

BACKGROUND OF THE INVENTION

1. Field Of The Invention

The present invention generally relates to a service call for repairing a computer system. The present invention specifically relates to a utilization of a service history log in assisting varying service representatives with repairing a computer system.

2. Description Of The Related Art

A service representative responding to a service call for repairing a computer system typically generates a repair record (e.g., parts replaced, components used, etc.) for storage within a corporate database. The repair record is intended to provide the original service representative or a different service representative with historical repair information of the computer system when the computer system experiences the same or similar type of problem. However, in many cases, the different service representative will not have access to the repair record when responding to a service call corresponding to the computer system experiencing the same or similar type of problem. As a result, the different service representative may duplicate the same repair action as the original service representative.

For example, a first service representative may respond to a service call for an intermittent problem indicating a processor card or a backplane as the possible field replacement unit serving as the source of a failure of the computer system. While the backplane is the true source of the failure, the first service representative may decide to replace the processor card, and runs a successful diagnostic verification of the computer system. Thus, the first service representative assumes that the processor card was the source of the failure and generates a first service repair record that is stored within a first database.

Shortly thereafter, a second service representative, from the same or different company, responds to a subsequent service call indicating the processor card and the backplane as the possible field replacement units serving as the source of a subsequent failure by the computer system. Without having access to the stored repair record, the second service representative decides to replace the processor card and runs a successful diagnostic verification of the computer system. As with the first service representative, the second service representative assumes that the processor card was the source of the failure and generates a second service repair record that is stored within the first database or a second database.

With the backplane being the true source of both failures and without a generation of a repair record that is accessible by all future service representatives responding to subsequent service call of the same type, then the processor card may be replaced again and again and again. What is therefore needed is a system and a method for facilitating a management of a repair history of a computer system by varying service representatives responding to various service calls for repairing the computer system.

SUMMARY OF THE INVENTION

The present invention relates to a service history log of computer repairs that overcomes the disadvantages associated with the prior art. Various aspects of the invention are novel, non-obvious, and provide various advantages. While the actual nature of the present invention covered herein can only be determined with reference to the claims appended hereto, certain features, which are characteristic of the embodiments disclosed herein, are described briefly as follows.

One form of the present invention is a method for monitoring a service repair of a processing system. First, a data signal indicative of an operational failure of the processing system is received. Second, a plan for repairing the operational failure of the processing system is stored within a storage device in response to the reception of the data signal. Third, the plan for repairing the operational failure of the processing system stored within the storage device is retrieved during a repair of the operational failure of the processing system.

A second form of the present invention is a system for monitoring a service repair of a processing system. The system comprises a storage device. The system further comprises means for storing a plan for repairing an operational failure of the processing system within the storage device in response to a reception of a data signal indicative of the operational failure of the processing system, and means for retrieving the plan during a repair of the operational failure of the processing system.

A third form of the present invention is a computer program product in a computer readable medium for monitoring a service repair of the processing system. The computer program product comprises a computer readable code for storing a plan for repairing an operational failure of the processing system within the storage device in response to a reception of a data signal indicative of the operational failure of the processing system, and computer readable code for retrieving the plan from the storage device during a repair of the operational failure of the processing system.

The foregoing forms and other forms, features and advantages of the present invention will become further apparent from the following detailed description of the presently preferred embodiments, read in conjunction with the accompanying drawings. The detailed description and drawings are merely illustrative of the invention rather than limiting, the scope of the invention being defined by the appended claims and equivalents thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a block diagram of one embodiment of computer hardware employed in the present invention;

FIG. 2 is a block diagram of one embodiment of computer software employed in the present invention; and

FIG. 3 is a flow chart of one embodiment in accordance with the present invention of a service call routine implemented by the **FIG. 2** computer software.

DETAILED DESCRIPTION OF THE
PRESENTLY PREFERRED EMBODIMENTS

Referring to **FIG. 1**, a processing system **10** and a hardware system console **20** are shown. System **10** and console **20** may be configured in any form for accepting structured inputs, processing the inputs in accordance with prescribed rules, and outputting the processed results as would occur to those having ordinary skill in the art, such as, for example, a personal computer, a workstation, a super computer, a mainframe computer, a minicomputer, a super minicomputer, and a microcomputer.

For purposes of describing the principles of the present invention, system **10** is shown as comprising field replaceable units (FRUs) in the form of a processor card **11**, a memory card **12**, a backplane **13**, an input/output (I/O) adapter card **14**, an audio adapter card **15**, and a video adapter card **16**. System **10** runs an operating system, such as, for example, an AIX operating system or an OS/2 operating system, that provides an error report **ER** of any operational failure of system **10** to console **20**. From the subsequent description herein of console **20**, those having ordinary skill in the art will appreciate the applicability of the principles of the present invention to any embodiment of system **10**, such as, for example, a logically partitioned LPAR multiprocessing system.

Console **20** comprises a microprocessor **21** and a memory **22**. Microprocessor **21** is preferably one of the Intel families of microprocessors, one of the AMD families of microprocessors, one of the Motorola families of microprocessors, or one of the various versions of a Reduced Instruction Set Computer microprocessor such as the PowerPC chip manufactured by IBM. Memory **22** represents a single type of computer readable medium or an

aggregate of various types of computer readable mediums for storing service software **30** (**FIG. 2**). Accordingly, memory **22** can include a read-only memory, a random access memory, a hard drive, a CD-ROM drive, a floppy drive, and/or the like. In other embodiments of console **20**, software **30** may be partially or fully implemented with digital circuitry, analog circuitry, or both.

A database **23** (**FIG. 2**) is also stored within memory **22**. Database **23** includes one or more service action event entries that are flagged as either an open item requiring a service call, an incomplete item that has partially serviced, or a complete item that has been fully serviced.

Referring additionally to **FIG. 2**, an interaction of software **30** with system **10**, a service representative, and database **23** is shown. Software **30** includes a service focal point module **31**, a service agent **32**, and a user interface **33**. A functional description of an implementation of a service call routine **40** (**FIG. 3**) by software **30** will now be described herein by the description of data transfers.

Referring additionally to **FIG. 3**, during a stage **S42** of routine **40**, module **31** receives error report **ER** from a diagnostic routine (not shown) or the like including in system **10** upon an operational failure of system **10**. In one embodiment, error report **ER** includes a service action plan **SAP** that lists each FRU **11**-**16** of system **10** that may be the cause of the operational failure of system **10**. The list is sorted from the most probable FRU for causing the operational failure to the least probable FRU for causing the operational failure. The sort most probable FRUs is based on one many possible techniques, such as: (1) type of failure; (2) types of FRUs in system; and (3) length of time between replacement and/or serving of certain FRUs.

Module **31** thereafter proceeds to a stage **S44** of routine **40** to generate and store a service action event entry within database **23**. In one embodiment, the service action event entry is stored as an open item $\mathbf{SAEE_O}$ requiring a service call. The service action event entry $\mathbf{SAEE_O}$ includes service action plan **SAP** and a flag indicating service action event entry $\mathbf{SAEE_O}$ is an open item.

Module **31** thereafter proceeds to a stage **S46** of routine **40** to contact a service representative. In one embodiment, module **31** provides service action plan **SAP** to service agent **32** whereby service agent **32** controls a call to the service representative.

In response thereto, the service representative can implement a routine **60** as shown. During a stage **S62** of routine **60**, the service representative reads the service action plan **SAP** whereby the service representative can ensure that he/she has the proper FRUs as well as sufficient equipment and tools for responding to the service call.

The service representative thereafter proceeds to a stage **S64** of routine **60** to find service action event entry $\mathbf{SAEE_O}$ on site. In one embodiment, the service representative utilizes a monitor (not shown) and a pointing device (not shown) of console **20** to access module **31** whereby module **31** sorts through database **23** to compile all open service action event entries within database **23** into a service action event log **SAEL** which is displayed via interface **33** on the monitor during a stage **S48** of routine **40**. The service action event log **SAEL** will include service action event entry $\mathbf{SAEE_O}$. The service representative can therefore search service action event log **SAEL** for service action event entry $\mathbf{SAEE_O}$ to verify the need for the service call and review service action plan **SAP**.

The service representative thereafter proceeds to a stage **S66** of routine **60** to ascertain the history of service action event entries related to service action event entry $\mathbf{SAEE_O}$. In one embodiment, the service representative utilizes the monitor and the pointing device of console **20** to access module **31** whereby module **31** sorts through database **23** to compile all incomplete and closed service action event entries within database **23** into a service history log **SHL** which is displayed via interface **33** on the monitor during a stage **S50** of routine **40**. In a second embodiment, module **31** automatically compiles and displays service history log **SHL** during stage **S50** in response to compiling and displaying service action event log **SAEL** during stage **S48**.

The service history log **SHL** includes any incomplete or closed service action event entries related to service action event entry $\mathbf{SAEE_O}$. As such, the service representative searches service history log **SHL** for the incomplete and closed service action event entries related to service action event entry $\mathbf{SAEE_O}$. The related service action event entries will include associated service action plans as well as any comments provide by previous service representatives.

The service representative thereafter proceeds to a stage **S68** of routine **60** to selectively apply the service action plan **SAP** of service action event entry $\mathbf{SAEE_O}$ in view of the service actions plans and comments of the related service action event entries listed in service history log **SHL**. In one embodiment, the service representative replaces the FRU with the highest probability of being the cause of the operational failure of system **10** that does not have a repair history as indicted by service history log **SHL**. Thus, the service representative does not duplicate any previous service calls, yet more than likely resolves the cause of the operational failure of system **10**.

Alternatively, when the service representative or an associated service center is of the opinion that a previous service call was not handled properly, the service representative can either (1) remove and then re-insert a FRU regardless of the repair history as indicted by service history log **SHL** or (2) replace a FRU that does have a repair history as indicted by service history log **SHL**.

The service representative thereafter proceeds to a stage **S70** of routine **60** to access module **31** to thereby list service action event entry $\mathbf{SAEE_O}$ as incomplete or closed within database **23** when partially or fully, respectively, implementing the service action plan **SAP** during stage **S68**. In one embodiment, user interface **33** provides a display of each FRU listed in the service action plan **SAP** whereby the service representative can mark each FRU that was replaced or re-inserted during the service repair. User interface **33** thereafter provides a display of a comment box whereby the service representative can provide details related to the service repair. A close service action event entry $\mathbf{SAEE_C}$ including any comments is provided to module **31** when the service representative marks one or more FRUs. Alternatively, an incomplete service action event entry $\mathbf{SAEE_I}$ including any comments is provided to module **31** when the service representative does not mark any FRUs.

In response thereto, during a stage **S52** of routine **40**, module **31** will store close service action event entry $\mathbf{SAEE_C}$ or incomplete service action event entry $\mathbf{SAEE_I}$ (whichever is received) within database **23**. In one embodiment, module **31** stores close service action event entry $\mathbf{SAEE_C}$ or incomplete service action event entry $\mathbf{SAEE_I}$ by writing close service action event entry $\mathbf{SAEE_C}$ or incomplete service action event entry $\mathbf{SAEE_I}$ over open

service action event entry **SAEE$_O$**. In a second embodiment, module **31** changes a status flag of open service action event entry **SAEE$_O$** to indicate open service action event entry **SAEE$_O$** is incomplete or closed.

While the embodiments of the present invention disclosed herein are presently considered to be preferred, various changes and modifications can be made without departing from the spirit and scope of the invention. The scope of the invention is indicated in the appended claims, and all changes that come within the meaning and range of equivalents are intended to be embraced therein.